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Hughlings Jackson Lecture

The Drift and Dissolution of Language

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Medicine owes to Hughlings Jackson the inceptive glimpses into the psychology of expressive disorders. His first reflections upon this subject appeared in print just a century ago (Jackson 1864). He looked upon aphasia, not so much as a focal cerebral deficit, as a 'taking apart' of a complex symbolic endowment, namely language. His dynamic thinking was decades ahead of his time, and we are still astonished at the exciting ideas he promulgated, and the way he anticipated many of our contemporary notions. I think that Jackson today would be intrigued with the opportunities opening up through the lessons of linguistics and information-theory, especially when linked with the technical refinements of speech-recording.

Edward Sapir – that most attractive exponent of philology – proclaimed that linguistics should concern itself with language in all its aspects: language in operation; language in drift; language in the nascent state; and language in dissolution. Although not entirely conforming with the Sapirean use of the terms, we might proceed to examine two of these aspects, namely, the drift and the dissolution of language. I borrow these expressions to indicate the opposite poles of disordered language, the mildest and the severest types of an aphasia respectively.

Drift: Minimal Dysphasia

Let us first examine what we might call 'minimal dysphasia', where the linguistic imperfections are often so slight and so fine as to elude routine testing. The shortcomings likewise in ordinary conversation pass unnoticed by both speaker and listener. These features may herald the slow encroachment of a space-occupying lesion upon the zone of language. We may therefore speak of a 'pre-aphasia', or of an 'incipient, inchoate, or ingravescent dysphasia' . . . the harbinger of an unequivocal speech-impairment. Or, these same minimal defects may be discerned in the final recovery-stages, as a 'residual dysphasia'.

Nothing less than an extended technique of testing will uncover these minimal signs. These may stand out against a background or setting of an adynamism, or lack of spontaneity, which also applies to language. This inertia may, however, be interrupted by activity which is impulsive and unrestrained, which again may extend to verbal behaviour.

The hallmarks of a pre-aphasia may be mentioned briefly. There will be a lessened facility in the choosing of words, the available vocabulary remaining intact. The number of 'types' – that is different words employed – is reduced. Less common terms are selected slowly, if at all, and with a notable inconsistency. Defect of word-finding is revealed when the patient tries to recite a catalogue of instances belonging to a particular generic class (animals, flowers); or sharing a common property (redness, sharpness).

Pari passu with the restriction of vocabulary in actual use is an over-employment of certain trite phrases and phrase-words, clichés, preformed speech-patterns, favoured word-linkages, verbal biases, and successive habits of connected speech.

An over-elaborate and unorthodox use of words may come to light during an interview. In naming articles before him, the patient may supply the correct term quite promptly, but then lapse into an odd spontaneous verbalism. Quite unasked for, he may proceed to indulge in verbose circumstantiality. Thus, shown a watch, the patient may name it but then go on to exclaim . . . 'and a very nice one too, if I may say so'. Or,

'. . . my husband hasn't got one like that, and he's got everything'. This little *manie de parler* may be spoken of as 'gratuitous paralogia'. In some ways it recalls Petrie's *regressive metonymy* described in some leucotomized patients (Petrie 1949).

An inadequate performance of sequential tasks as opposed to isolated ones, may prove revealing. Both interpretation and recapitulation of verbally presented material may be poor, particularly when interlocking or consecutive themes are concerned, and when references are allusive or ambiguous. The patient may fail to paraphrase such commonplace slogans as 'Players please', or wise saws like 'easy come, easy go', 'still waters run deep', or 'a bird in the hand'. This failure may be due to a defect either in comprehension or in explanation (Zangwill 1964), or in both.

In attempting to repeat a couple of consecutive jokes or fables, the patient may confuse the two propositions, and contaminate his narrative with inappropriate ideas and words. The patient may likewise fail to solve arithmetical problems when posed verbally, in speech or in print. Spontaneous letter-writing, or the production of an essay upon a set theme, may also betray a minimal dysphasia, whether inchoate or residual. Such a text will in addition lend itself to linguistic analysis, and disclose aberrations in the token-type ratio, or in sentence-length, or in the verb-adjective fraction. Inadequacy may be observed in what Luria (1958, 1959) has called the regulating function of speech. For example, the patient may fail at such a consequential task as 'when I tap the table once, lift your right hand; raise your left hand when I tap twice; and if I tap three times, do nothing'. Or, directed to squeeze a rubber bulb with the right hand in response to the flashing of a red light, and with the left hand when a blue light appears, the patient may soon become confused and make stereotyped actions (Mescheryakov 1953, Ivanova 1953). Likewise the pre-aphasiac fails when given some such instruction as . . . 'when I count as far as 12, raise your hand' (Luria 1958). A pre-aphasiac may be unable to supply an analogy when given a series of three items, e.g. 'lion, teeth; eagle, . . . ? . . .'. He will remain perplexed even when the missing word is included among others and put to him in a multiple choice type of question.

Behind all these minor defects one may also observe a raised duration threshold, or a slowness in both the execution and reception of verbal material in the case of very mild aphasiacs. Botez's term 'inattention' in this connexion is not a happy one, as the author himself realized (Botez 1961).

Dissolution:
Maximal Speech-loss

Let us turn from these minimal cases to a consideration of massive defects of communication – Sapir's dissolution of language – for the 'method of extreme cases' is one which is often of unexpected value in studying a problem. *Aphasia totalis* is rare save as a transient phenomenon. Ordinarily the maximal speech-impairment is met with in cases of 'monophasia'. This term refers to those cases where spontaneous speech is restricted to a kind of *hapax legomenon*, that is, a solitary 'word' or holophrastic word-cluster, which is reiterated in a stereotyped fashion. Russian neurologists refer to this phenomenon as a 'word embolus'. Other terms like 'formula-speech', 'word-rests' (*Wortreste*), or 'speech automatism' have also been used at times, but in this country we usually follow Jackson and speak of 'recurring utterance'. Originally described in the eighteenth century, this phenomenon was first specifically investigated by Hughlings Jackson, inspired, I believe, by the memory of a boyhood acquaintance who was so afflicted.

Jackson's four-fold classification of these recurring decimals of speech is a little artificial. By far the commonest state of affairs is for the patient to give vent to the stereotype 'yes' – or 'no' – or sometimes both of them. Analysis of 100 cases of recurrent utterance (compiled from Henschen 1922) where a solitary comprehensible word was concerned has shown that in 63 it was a matter of *yes* and *no*, the remaining 37 being made up of a great diversity of utterances. It was possible to break down these figures. Of 65 such cases out of a total of 134 patients, 36 were males and 29 females. Negative particles (*no*, *nein*, &c.) alone were used by 6 (2 males and 4 females); affirmative particles (*yes*, *oui*, *ja*, &c.) by 23 (11 males, 12 females); and both negative and affirmative by 36 (23 males, 13 females).

The survival of these two particles is not surprising for they constitute important as well as common units of spoken speech, as I have stressed at length elsewhere (Critchley 1961). Their rank in written speech is far less exalted. However, the mere frequency of *yes* and *no* in normal diction cannot be the whole explanation of their important role as a recurring utterance. Though *yes* and *no* rank high in the Lorge-Thorndike tables of frequency of usage, they stand lower than many other words (articles, prepositions, conjunctions) which rarely if ever appear as stereotypes. Table 1 shows their place in the Lorge-Thorndike word-lists, as compared with other terms, common in normal parlance, rare in aphasia (Thorndike & Lorge 1944).

Table 1
Some of the most commonly occurring words in the English language

Word	*Lorge magazine count*	*Lorge-Thorndike semantic count*
THE	236,472	Not known
AND	138,672	Not known
A, AN	131,119	Not known
I	89,489	24,250
IN	75,253	96,674
IS	33,404	43,816
WITH	32,903	38,041
ON	30,224	28,382
BUT	23,704	21,380
ME	23,364	5,818
ONE	17,569	14,860
NO	11,742	9,492
YES	2,202	593

When a recurring utterance comprises some term other than yes or no, it is often a most unusual and unexpected one. Likewise, when entailing more than a single 'word' it may show itself as a phrase, and a seemingly significative one at that. Frequently, speech automatism is duplicated – 'yes, yes'; 'no, no'; 'come, come'. According to Sapir (1921), reduplication in speech indicates distribution, plurality, repetition, customary activity, increase of size, added intensity, continuance. In the context of our present problem it suggests a primitive method of enhancing meaning with verbal economy. This striving towards communication on the part of the patient may be all-important.

A stereotyped phrase may be either banal in context (like 'Good morning', or 'je ne peux pas parler' or 'Ich kann nichts'), or else a wholly unexpected one ('Ace of Spades', 'Boulevard de Grenelle, 131'). However plausible in content, the phrase is incongruous in its setting. Each 'word' wears the garment of a semanteme but in reality it is quite devoid of reference-function. Perhaps we should speak of 'displaced semantemes' or 'pseudo-semantemes'. Terminology obviously raises difficult problems. The fact that the so-called 'word' appears on all occasions means that it actually ceases to be a word. Its method of employment precludes its habitual reference-function. When for example the aphasiac proclaims nothing but the syllable 'come' he is admittedly employing a dictionary word with a conventional connotation. But as the patient uses it there is no such attached significance; it might just as well be any other word, or a piece of nonsense, or even a grunt. The recurrent utterance 'come' does not therefore qualify as a word in the strict sense, for it is a linguistic counter that has been filched, to be used out of context in an inconsistent and highly individual manner. Since the stereotypy is not strictly speaking a word at all, the patient cannot pronounce a part only of it, any more than he can say any other word. To a particular aphasiac, his recurrent 'Battersea' meant nothing, and consequently he could emit neither 'Batter' alone, nor 'sea'. The same remarks apply to clusters of 'words' occurring as stereotypes. As Jackson (1879–80) said . . . 'these phrases, which have propositional structure, have in the mouths of speechless patients no propositional value. They are not speech, being never used as speech; they are for use only compound jargon'. Often the phrase is interjectional, with profane or obscene overtones ('My God!' 'Jesus'), sometimes curtailed or deformed ('Cré nom', 'Mede (=merde)'; 'é nom é ieu'; 'sacon').[1]

Impressed no doubt by his juvenile experience, Jackson drew attention to the frequency with which a fragment of jargon forms a stereotypy. Here again, reduplication is common, if not the rule ('Tan Tan', 'zu zu', 'watty watty', 'taratata').

Modification of the Recurrent Utterance

Whether the recurrent utterance be a 'word', phrase or piece of gibberish, certain modifications may develop over the course of time. The stereotyped formula-speech is at first produced on every possible occasion, however unlikely. Hence, to begin with, it possesses the attributes of a compulsion, emitted at times when silence would be more fitting. Thus during a three-corner interview between doctor, patient and relative, the aphasiac may butt in with his inappropriate verbal automatism, like Epimarchus, incapable of speech, but unable to hold his tongue. In its role as a compulsion the stereotyped sound may be uttered in an explosive, almost violent fashion, 'released like a vigorous trumpet-blast' (*wie kräftige Trompetenstösse*, von Monakow 1914).

The positive side of this problem deserves mention. It is unnecessary to discuss at length the various hypotheses which seek to explain why a particular expression should appear as a recurring utterance in an individual patient. We can be sure, however, that it is no haphazard event. Though we may not understand, meaning is certainly there. The role of an overpowering emotion immediately prior to the stroke has been widely accepted, as suggested by Freud (1891). Whether Jackson's theory of a 'stillborn proposition' is credible, or Gowers' modification thereof (1885), depends upon one's knowledge of the immediate pre-morbid circumstances of each

[1] Another compulsive manifestation sometimes observed in aphasiacs, bears a distant relationship with our subject. The patient interjects at regular intervals a tic-like phrase into the stream of talk. Moutier's (1908) patient could not speak four words on end without the exclamation 'Ah merde! cré catin de casaque!'

case. Certainly I have observed patients where Jackson's theory could well apply, but also others where that of Gowers would seem more reasonable. Again there have been many other cases where none of these hypotheses would fit. The common iteration of jargon, as well as of 'yes' and 'no', though not flatly contradicting the views of Freud, Jackson and Gowers, is rather more difficult to explain.

While remaining the sole item of communication, the recurrent utterance later loses much of its tic-like nature. The patient now becomes able to inhibit the upsurge of stereotypy, and he may remain silent for longer periods. At this stage additional speech automatisms may develop so that the vocabulary will now comprise a handful of recurrent utterances. But this does not indicate the existence of a code. That is to say one particular stereotype does not 'stand for' any specific object or idea, with another stereotype linked with another. It bears no analogy for example with the binary principle of the drum languages of Africa. An apparent exception was Broca's patient Lelong who had several recurring utterances (Broca 1861). One of them, 'tois' – a corruption of 'trois' no doubt – was used solely in the context of number. Another important advance will by now have come about, leading to some measure of communicative play, despite the attenuated vocabulary. This results from the patient learning to utilize to the full the suprasegmental phonemic factors. By altering the prosodics of the recurrent utterance the aphasiac now makes his solitary 'word' – 'no', for example – refer in an idiosyncratic way to a variety of concepts: greeting, dismissal, acknowledgment, affirmation, denial. The melody of speech is restored, even enhanced. The patient 'sings' his recurrent utterance, as Jackson put it. Thus the patient has learned to endow his involuntary stereotyped 'word' with his own idiosignificance. In this way the sound emitted takes on a meaning for the occasion like a disguise – a meaning which is not fixed or consistent, but which is elastic, expedient, and dependent upon the setting. This same meaning may or may not be shared by others, for communication depends upon the skill with which his attempts can be decoded.

This property whereby a solitary word can constitute not only a sentence-word, but can also relate to a great diversity of ideas, is well known to linguists aside from the problem of aphasia. According to Dostoievsky (1876-81) 'it is possible to express all thoughts, feelings, and even reflections, in one word', and he gave an account of a ridiculous argument between six topers, comprising merely one unmentionable word.

Such adaptability precludes any grouping of the recurrent pseudo-semantemes into syntactical classes, e.g. declarative, interrogative, interjectional, hortatory. One and the same stereotype can serve now as an exclamation, now as a question, later as a proposition.

Non-verbal aids to communication, such as kinesics, soon become pressed into service. With his intact limb and facial musculature the patient will employ a rich pantomime in order to eke out the meaning he seeks to attach to his solitary utterance. At a later date, if and when the stereotypy becomes established as the sole articuleme, the patient may make an extraordinary adjustment. The ability of such patients to transmit information of a complicated sort is astonishing. Superficially this would appear to represent a fantastic antinomy between intellectual integrity and failure to verbalize. It would be unwise, however, to accept the clinical dissociation at its face value, for searching test-procedures will almost certainly uncover other defects.

At this stage in recovery the patient may respond to re-educational measures (Kuttner 1928, Alajouanine 1956). Half the patients with recurrent utterance improve while in the other half the stereotypy is perpetuated. In favourable cases the patient can often be made to emit a pre-formed speech pattern. Thus he may be coaxed to articulate, albeit haltingly, the days of the week, numerals, letters of the alphabet, if put into an appropriate frame of endeavour. By accurate imitation of the therapist's lip-movements, he may be prevailed upon to repeat phonemes, then words. He may be encouraged to complete a familiar verbal automatism started by the examiner: 'Bull and [Bush]'; 'black and [white]'; 'sausage and [mash]'.

However, such accomplishments may get no further than amounting to a mere trick, or *jeu des mots*. In an ordinary setting the spontaneous utterances stay chained to the original stereotypy, with the verbal acquisitions appearing merely at the bidding of the neurological ringmaster. An all-important factor in retarding recovery is the persistence of an oral apraxia, an epiphenomenon which is often overlooked. During the stage of rehabilitation new words are as a rule articulated slowly, hesitatingly, on a staccato monotone. Such newly acquired diction is quite unlike the fluent melodious evocation of the recurring utterance.

Apart from his attempts at talking, the monophasiac is seriously handicapped when he tries to write. Rarely if ever can he do more than scribble,

or laboriously copy a text. The recurrent utterance, be it noted, does not obtrude itself as a recurrent grapheme, a point which contradicts Jackson's view that stereotypy of speech is due to the automatic action of the opposite hemisphere. It may well be that an oral apraxia plays a part in perpetuating the initial efforts at spoken communication, a mechanism which does not affect the act of writing. Other means of expression are at times less difficult for these patients with recurrent utterance. For example a monophasic secretary may find it possible to communicate better by recourse to a typewriter than by relying on speech, writing or gesture. Thus a young woman rendered aphasic after carotid ligation, could say nothing whatsoever except 'no'. Put before a typewriter she slowly and unassisted executed the following note: 'Dear Doctor Critchley. Where are the speech therapists? I am getting fed up. Love, V..... H.....'

Attention is rarely directed towards the perceptual defects in cases of recurrent utterance. In greater or lesser degree they are usually present, a point which detracts from the conventional ascription of this type of speech disorder to an extreme Broca's aphasia.

Nowadays morbid anatomy attracts less attention among aphasiologists than it did and it is unnecessary to pursue here this matter of localization of lesions in recurrent utterance. It is more tempting to turn one's back upon pathology, and to regard recurrent utterance as the clinical manifestation of severe speech-loss, brought about by a conjunction of various factors, including *inter alia* a necessary volume of brain-damage; a sufficient magnitude of speech-defect; abruptness of onset; potent emotional and intellectual circumstances operating just before the stroke; and an associated bucco-labio-lingual apraxia. More appropriately we should focus attention upon a dynamic type of ætiology rather than on a static location of a mere brain-defect. 'An insignificant spar remaining from the shipwreck of speech' is how Alajouanine (1956) vividly described the phenomenon of recurrent utterance. Perhaps, by a close and imaginative examination of such verbal flotsam, we may learn to reconstruct some of the circumstances of the disaster.

Mental Status of Patients with Recurring Utterance

Those neurologists who have carefully observed over a long period of time patients with an established recurrent utterance can hardly refrain from trying to assess the state of mentation. How striking the contrast between the crippling failure to communicate, and the relative integrity of alertness, social behaviour, and adjustment. To what extent is the patient handicapped in his conceptual thinking? What is the nature of his silent rumination? Can he still utilize a verbal type of imagery even though he is incapable of verbal exteriorization?

Such questions naturally tie up not only with disputes as to the intellectual status of aphasiacs, but also with a still older problem, the normal relationship between Thought and Speech. For centuries, philosophers have locked horns in an uncompromising contest over this latter point. Opinionated pronouncements have been made, characterized as much by disaccord as by dogmatism. To some it would seem that no problem exists, and that the answer is obvious to all save the obtuse or the prejudiced. Unfortunately, however, philosophers answer this question now one way, now the other, but always with the utmost assurance.

In reviewing the age-old arguments, it seems astonishing to find how rarely the schoolmen have resorted to the lessons which might be learned from observing those who are speechless but still vigilant. Inter-disciplinary sectarianism has rarely been broken down, and the promising co-partnership of philosophers and aphasiologists has scarcely been broached.

Although the victim of recurrent utterance is virtually bereft of words as a tool in communication, he is not necessarily deprived of the service of words. Jackson used to say that he is speechless but not wordless. But whatever alliance exists in such a case between speech and thought it must be indeed remarkable. He can identify words when he hears them, even though complete verbal comprehension is impaired. To some extent he can 'manipulate' words at a silent level, as when he picks out and assembles letters to form a word, or when he points to an appropriate word from a list of alternatives before him. His performance may be hesitant, even halting, but the very fact that some attempt is made is important.

A patient whose speech is restricted to a stereotyped 'no', may be shown an article and asked to name it, for example a pair of scissors. Obviously its identity is recognized. Pressed for an answer, the patient may painfully emit a post-dental fricative sound but no more. With a pencil he may scrawl an S and then give up. On a typewriter, or with cut-out letters, he fares better and selects an 's' and a 'c'. Shown a list of possible alternatives the patient may point to the word 'scissors' but even so fails to verbalize. Or, given a

dictionary, the patient may thumb the pages until he arrives at 's' and then he may narrow his search to 'sc' and even 'sci'. Further than this he may not be able to go. Again the patient may succeed in giving some inkling that he has a knowledge of the word which he cannot exteriorize. By tapping, or by squeezing the examiner's hand, he can indicate the number of syllables in the elusive term (Proust-Lichtheim manœuvre). All these procedures serve to show that the patient still possesses an engram of the word 'scissors', vague and intangible though it be.

In the context of the Thought-Speech controversy, such experiments can only mean either that in ordinary circumstances thought remains possible in the absence of words; or else that to the monophasiac words are still available despite a powerlessness to exteriorize them. Both these conclusions are compatible with those of Whitehead (1938) who said '. . . language is not the essence of thought. But this conclusion must be carefully limited. Apart from language, the retention of thought, the easy recall of thought, the interweaving of thought into higher complexity, the communication of thought, are all gravely limited'.

Some measure of conceptual thinking lies therefore within the capacity of a patient with recurrent utterance. In this exercise he utilizes to some extent words at a silent level. This is one problem: the question as to the nature of his silent browsing is another. At such times, he is not in contact with an interlocutor; he is neither decoding information, nor trying to act upon it. He is merely caught up in silent reverie. Is this day-dreaming a type of imageless thinking? This is unlikely, though the images involved may not be of a verbal sort. In such circumstances this type of aphasiac may well be simply a passive agent for a series of images which are mainly of a visual character. These images will be loosely connected, being linked one with another by the freest of associations. Consistency is not there; nor is profundity.

In many ways the phenomenon of recurring utterance differs from the malperformance of most other aphasiacs. From all the clinical evidence it would seem that the patient possesses at least some measure of inner speech and conceptual thinking. Faced with a situation like putting a name to an object he appears to have some idea of what he wishes to say. So far there is little difference from other aphasiacs. But as soon as the preverbitum ends by the patient with recurrent utterance breaking silence, a fantastic travesty of verbal behaviour takes place. Irrespective of what he wants to say or tries to say, his articulatory muscles take charge and involuntarily shape themselves according to a rigid pre-determined pattern, so that one audible complex and one only becomes exteriorized. This resulting sound bears no relationship whatsoever with the idea within the preverbitum. As Alajouanine & Lhermitte wrote (1963): 'Thought is squeezed into a mould so as to produce the same copy or similacrum each time.'

The physiological mechanism appears to be twofold. First there is an imperfect selection of the necessary sound-symbol, a defective ecphoria in fact. Secondly an uncontrolled, uninhibited activity of the muscles of articulation takes place, like a severe action tremor which appears as soon as a deliberate attempt is made to execute a skilled movement.

Speech-recording in Aphasiacs

Modern instrumental methods of recording constitute a considerable advance over the guesswork descriptions of the past. Furthermore such records lend themselves to unhurried and repeated analysis. Certain new points come to light with an important bearing upon the theory of speech in aphasia, the research now becoming nomothetic as well as idiographic (Allport 1942). Some of the problems of recurrent utterance may in this way become clarified.

An up-to-date mode of transcribing an aphasiac's performance can be devised by extending and elaborating the technique of recording a psychiatric interview, practised by Pittenger, Hockett & Danehy (1960). It is really a logical development of what Hughlings Jackson taught, namely that one should set down a faithful record of exactly what a patient says and does, and not a personal interpretation.

An extended transcript of a structural interview is illustrated in Fig 1. On the bottom line one reads the examiner's question and the patient's reply set out in conventional typology. Silent pauses are marked by a symbol and registered in tenths of a second. Just above, the patient's speech is translated into the broad or international phonemic script, to which have been added the approved supra-segmental notations, indicating stress, pitch levels, and terminal contours. At the top of the record is a description of the patient's gestural and mimetic behaviour as agreed by a panel of observers at the interview. Between the last two transcripts are placed the various expressive features, or 'emphatics' of speech – as Laziczius called them (Sebeok 1959) – according

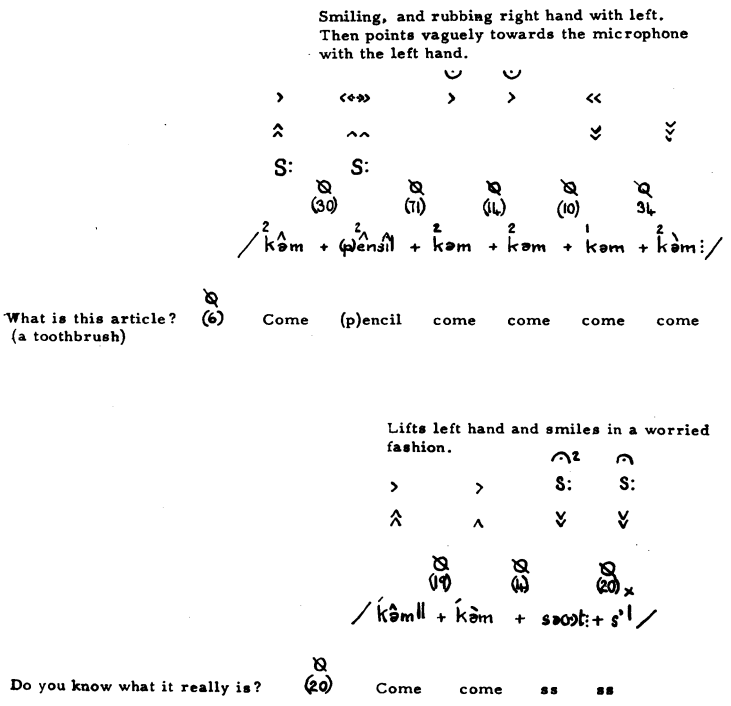

Fig 1 ***Extended transcript of an interview with an aphasiac whose recurrent utterance comprised the monosyllable 'come'. The top of the record contains a description of the patient's gestural behaviour. The middle part comprises the symbols indicating the various 'emphatics' or emotional overtones. Below that is an international phonemic transcript of the text, to which are added symbols indicative of stress, pitch levels, terminal contours, and silent gaps. On the lowest line there is set out the examiner's question and the patient's reply, in conventional typology***

to the symbol-system of Smith (1952) and Trager (1958). Here we find a note as to such paralinguistic features as volume and tempo of utterance, register effects, audible overtones, drawling or clipped modes of delivery, as well as the interpolated glottal closures, breaks, nasalization, spirantization, exhalations, and so on.

Such a graphic record of the patient's behaviour consequently entails a detailed account of a communicative 'package', that is to say a complex set made up of mutually reinforcing signals. Though demanding much time, close attention, and experience, a record like this is invaluable, demonstrating amongst other things that throughout the interview the aphasiac is striving to communicate by one means or another, the difficulties of the task being evidenced by the delays and indecisions, and the manner in which the words appear. Every interpolated sound, every mutilated phoneme, indeed every silent period is an eloquent signal, just as it is in a psychiatric interview. The introduction of a sigh, or laugh, or yawn must not be regarded as linguistic 'noise' but rather as an integral part of the information – in aphasiacs just as in normals. The transcripts demonstrate very clearly the Smith-Trager aphorism that in speech 'nothing, never happens'. 'Communicative behaviour is continual; and motionless silence is a special kind of communicative act.' Within every utterance, however imperfect, there lies a meaning which can be neither disguised nor concealed. This is implied in the 'law of immanent reference' which means that no matter what else human beings may be communicating about, they are always communicating about themselves, about one another, and about the immediate context of the communication (Pittenger *et al.* 1960). This law – which includes Ruesch & Bateson's notion of 'metacommunion' (1951) – is obeyed by all speakers, however aphasic they may be.

A study of aphasia by way of 'visible speech', i.e. sonography or spectrography, is new. The drawback of audible recording lies in the difficulties of translation into accurate printed symbols. Visible speech surmounts this problem. As Herodotus said: ὦτα τυγχάνει ἀνθρώποισι ἐόντα ἀπιστότερα ὀφθαλμῶν ('The ear is a less trustworthy witness than the eye'. Herodotus i, 8). Comparison of the broad band spectrograms of normal and aphasic speakers emitting the same

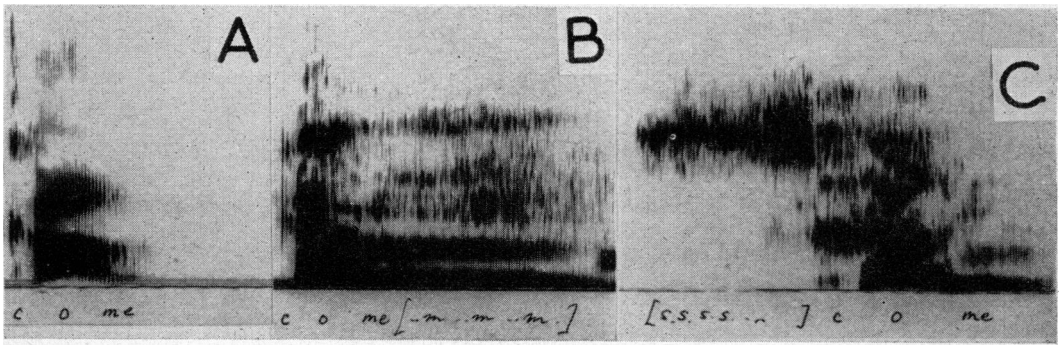

Fig 2 A, *spectrogram of a normal subject saying the word 'come'.* B *and* C, *'come' spoken by an aphasic patient with this particular recurring utterance. Note in* B *the excessive nasalization as an excessive terminal glide. In* C *there is an initial sibilant glide made up of a non-vocalic 'noise'. In* B *and* C *the formant is less distinctive than in* A. *(Reproduced by courtesy of Professor D B Fry, Department of Phonetics, University of London)*

word, shows obvious differences. The normal records are briefer, crisper and tidier (*see* Fig 2). Aphasic records are longer, blurred, less defined. We can also observe the intromission within the breath-stops, of foreign elements like subvocal spirantization – the hallmark of doubt or distress – or a nasalized prolongation of a consonantal phoneme. Hence it can be said that even at a purely phonemic level, the utterance of an aphasiac differs from that of a normal subject, though the difference may escape the ears of the untutored observer. The possible importance of these spectrographic findings is great, for they suggest that aphasia embraces a physiological disorder of lower as well as higher nervous activity, just as in the case of agnosia.

This line of research into aphasia obviously promises to prove most informative. The linguistic philosopher Whatmough (1956) has emphasized that up to now no one has attempted to match or compare the findings of speech spectrography with those of electroencephalography. 'If ever this could be done' he said 'it may point to an answer to the old poser of whether "thought" is sub-vocal language.'

Indeed we can take up this last point and direct our specific attention to the silent pauses which occur during an aphasiac's efforts to talk. This is specially profitable in the case of recurrent utterance, where the victim strives in vain to emit one term and produces quite another. It has long been known that the silent preverbitum may be the seat of subvocal movements of the articulatory organs. Behaviourists have paid particular attention to this phenomenon, which they often quote in support of the identity of Thought and Language. In recent times, electromyographic studies of the tongue and lips during silent thinking have been popular in the USSR (I S Iucevitch, Novikova 1955, Bassin & Bein 1955, A M Fonarev, N A Kryshova) and also in Poland (Herman & Krolikovska 1961). These techniques can be extended to aphasiacs.

Fig 3 is taken from the case of a patient with recurrent utterance whom I recently studied in Moscow in collaboration with Dr H N Pravdina-Vinarskaya. At first the patient's sole spontaneous speech was 'nou, nou', though later a few other jargon-like automatisms developed. Later still he could be persuaded to repeat a few simple words. In the silent phase while the patient vainly endeavoured to name an object, succeeding in producing after a delay only a stereotype, electrodes in the lip muscles picked up a complex of action potentials. Such findings again illustrate that in aphasia as in normal speech, silence is only relative, and that in any event, it is potentially communicative.

Summary

How can we sum up our remarks? Nothing in discourse is so hard as the ending of it. There is always something more to be said. Belloc was very clear on this: it is always difficult to turn up the splice neatly at the edges. Panurge's monograph on Conchology would never have been finished had not the Publisher intervened by threatening him with the Law. And as it is, the last sentence has no verb in it.

I have tried to direct attention to the polar opposites of speech-impairment, the minimal and the maximal, which I have termed respectively the drift and the dissolution of language. In the former there is the incipient dysphasia seen in the

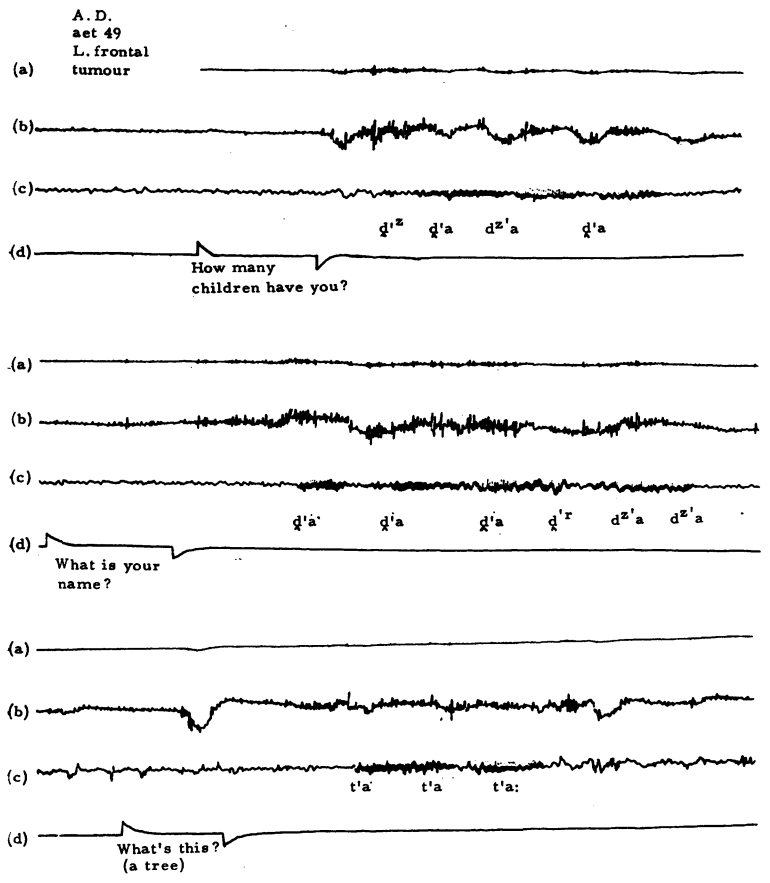

Fig 3 *Electromyogram taken from* (a) *orbicularis oris right, and* (b) *orbicularis oris left, of an aphasic patient with recurrent utterance,* (d) *indicates the request put to the patient. His audible response is recorded microphonically in line* (c)

earliest stages of a steadily advancing syndrome which later destroys speech; and it is likewise detectable in the last surviving errors in patients recovering from aphasia. The signs are subtle and require an extended clinical examination for their discernment.

The contrasting and severest type of speech-loss is found in aphasiacs with recurrent utterance. In such cases there exists an extraordinary mésalliance between the content of the will to speak, and the resulting sounds. As propositions these are meaningless, and it matters little whether they take the form of lexicon words or of gibberish. There is no reason to doubt that some sort of inner speech operates, in which verbal symbols are involved. The ritual strangulation which takes place at the end of the preverbitum may well be due to the unrestrained activity of a compelling buccal apraxia. What determines the pattern of the ritual in a given case is conjectural.

Newer techniques throw light upon the speech-mechanisms in aphasia, and suggest the simultaneous involvement of lower as well as higher speech centres.

'The real life of a thought only lasts until it reaches the frontier of the words. There is petrifies, is dead from then on.' This dictum of Schopenhauer's is surely a caricature of the normal physiology of speech. But it certainly applies to cases of recurrent utterance, especially when he went on to say: . . . 'thereafter it is imperishable, comparable to the fossils of prehistoric animals and plants. . . .'

REFERENCES

Alajouanine T (1956) *Brain* **79**, 1
Alajouanine T & Lhermitte F (1963) In: Halpern's Problems in Dynamic Neurology. Jerusalem; p 201
Allport G W (1942) The Use of Personal Documents in Psychological Science. New York
Bassin F V & Bein E S (1955) Conference on Psychology, 1–6 July; p 315
Botez M I (1961) *Acta neurol. scand.* **37**, 111
Broca P (1861) *Bull. Soc. Anat. Paris* **6**, 330, 398
Critchley M (1961) *Perspect. Biol. Med.* **5**, 101
Dostoievsky F (1876–1881) Diary of a Writer.
Freud S (1891) On Aphasia (trans. 1953). London
Gowers W R (1885) Lectures on the Diagnosis of Diseases of the Brain. New York
Henschen H E (1922) Klinische und anatomische Beiträge zur Pathologie des Gehirns. Part 7. Uber motorische Aphasie und Agraphie. Stockholm
Herman E & Krolikovska (1961) *World Neurol.* **2**, 991
Ivanova M P (1953) Dissertation, Moscow St. Univ.
Jackson J H
(1864) *Med. Pr.* **1**, 19, 41, 63
(1879–80) *Brain* **2**, 203, 323
Kuttner H (1928) *Mschr. Psychiat. Neurol.* **70**, 287
Luria A R
(1958) *Lang. & Speech* **1**, 14
(1959) *Word* **15**, 341, 453
Mescheryakov A I (1953) Dissertation, Moscow St. Univ.
Monakow C von (1914) Die Lokalisation im Grosshirn. Wiesbaden
Moutier F (1908) L'Aphasie de Broca. Paris
Novikova L A (1955) Conference on Psychology, 1–6 July; p 337
Petrie A (1949) *J. ment. Sci.* **95**, 449
Pittenger R E, Hockett C E & Danehy J J
(1960) The First Five Minutes. Ithaca, NY
Ruesch J & Bateson G (1951) Communication: The Social Matrix of Psychiatry. New York
Sapir E (1921) Language: An Introduction to the Study of Speech. New York
Sebeok T A (1959) *Word* **15**, 175
Smith H L jr (1952) An Outline of Metalinguistic Analysis. Washington
Thorndike E L & Lorge I (1944) The Teachers Wordbook of 30,000 Words. New York
Trager G L (1958) *Stud. Linguistics* **13**, 1
Whatmough J (1956) Language: A Modern Synthesis. London
Whitehead A N (1938) Modes of Thought. Cambridge
Zangwill O L (1964) In: Disorders of Language. Ed. A V S de Reuck & M O'Connor. London